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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/803,920	03/13/2001	Makoto Kondo	108920	8921

25944 7590 04/23/2003

OLIFF & BERRIDGE, PLC
P.O. BOX 19928
ALEXANDRIA, VA 22320

EXAMINER

NGUYEN, HUNG

ART UNIT PAPER NUMBER

2851

DATE MAILED: 04/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/803,920

Applicant(s)

KONDO, MAKOTO

Examiner

Hung Henry V Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on Amendment filed 2/14/03.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7, 15-23 and 28-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 6, 7, 15-23 and 28-38 is/are rejected.
- 7) ☒ Claim(s) 4 and 5 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on 06 February 2003 is: a) ☒ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 13 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 28-29, 31-32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As to claim 28, the recitation of "a suction force...is determined according to an allowable deformation amount, a Young's modulus of the second object, and a thickness of the second object" is ambiguous and indefinite. It is not clearly understood, how to determine the suction force as claimed.

As to claim 31, with the same reason, the recitation of "a suction force...of the second object" is vague and not clearly understood.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claim 1 is rejected under 35 U.S.C. 102(b) as being clearly anticipated by Sakurai (JP-405235060A).

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With respect to claim 1, Sakurai (fig.1) discloses a substrate holding apparatus comprising all basic structures of the instant claims such as: a base member (5); and a plurality of projecting supporting members (7) disposed on the base member such that the projecting supporting members are arranged in a triangular form/triangular lattice and distal end portions thereof are substantially positioned on a plane wherein the substrate (1) is to be placed on the plurality of supporting members.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

As best the claimed subject matters are understood (see rejection under 35 U.S.C. 112, second paragraph, supra). Claims are anticipated by references.

6. Claims 1-3, 6-7, 15-23, 28-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mori et al (U.S.Pat. 5,191,218) in view of Sakurai (JP-405235060A).

As to claims 1-3, and 15-21, 28-38, Mori et al discloses a vacuum attraction holding device for holding a substrate and is used in an exposure apparatus for transferring a pattern formed on a reticle onto a substrate and comprising: a base member (1), a suction mechanism (6,7) for attracting the substrate toward the base member. Mori et al does not expressly teach a plurality of projecting support members (3) being arranged like triangular lattice as well as being arranged in a isosceles triangular/or parallelograms/ or rhombuses. As discussed above, Sakurai

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discloses a substrate holding device where the projecting support members are arranged in triangular form/triangular lattice for supporting the substrate. It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Mori and Sakurai to obtain the invention as specified in the above claims. It would have been obvious to a skilled artisan to utilize the projecting support members in triangular shape as suggested by Sakurai (or parallelograms shape or rhomb shape) into the device of Mori for providing the even suction forces on the entire surface of the wafer and thus reducing the deformation of the wafer and improving the quality of the images to be printed on the wafer.

7. Claims 1-3, 6-7, 15-23, and 28-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taniguchi et al (U.S.Pat. 4,666,291) in view of Sakurai (JP-405235060A).

With regard to claims 1-3, Taniguchi (fig.1) discloses an exposure apparatus comprising substantially all structures as set forth in the instant claims such as: a substrate holding device (see fig.4) having a base member (12). With regard to claim 2, Taniguchi teaches a suction mechanism (20) for allowing the chuck platen (12) to suck the substrate by vacuum. As to claim 3, Taniguchi discloses a rim (12b) formed on the base member so as to surround the plurality support elements (15) and a gas suction port (19). With regard to claims 15-17, Taniguchi further discloses a light source (9); a mask (7) having a predetermined pattern formed thereon; a stage system (2) for moving the mask and wafer relatively to the exposure beam for scanning and exposing the wafer with the beam from the mask by irradiation of the exposure beam. Taniguchi lacks to show a plurality of projecting members being arranged in a triangular lattice for supporting the substrate. Sakurai discloses a substrate holding device comprising the

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projecting support members are arranged in triangular form/triangular lattice for supporting the substrate (see fig.1). It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teachings of Taniguchi and Sakurai to obtain the invention as specified in the above claims. It would have been obvious to a skilled artisan to provide the projecting support members as taught Sakurai in triangular shape or parallelograms shape or rhomb shape into the substrate supporting apparatus of Taniguchi for providing the even suction forces on the entire surface of the wafer and thus reducing the deformation of the wafer and improving the quality of the images to be printed on the wafer.

8. Claims 1-3, 6-7, 15-23, and 28-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hashimoto (JP-409295236A) in view of Armstrong et al (U.S.Pat. 6,072,163).

With respect to claims 1-3, 6-7, 15-23 and 28-38, Hashimoto (fig.2) discloses a substrate holding device comprising substantially all of the limitations of the instant claims including: a base (2); a plurality of projecting members (6) for supporting the substrate; a suction mechanism (4,8) which sucks the substrate placed on the plurality of support members toward the base member side. While Hashimoto teaches the plurality of projection members being arranged in a square lattice (see fig.3) for supporting the substrate but does not specifically disclose that they are arranged in a triangular lattice as recited in the instant claims of the present application. Armstrong et al teaches a substrate holding device (see figs. 12-16) where a plurality of projecting members (427) are arranged in triangular fashion on a base member (426) for supporting the wafer (540) (see col.29, lines 18-20). It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of

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Hashimoto and Armstrong et al to obtain the invention as specified in claims 1-3, 6-7, 15-23 and 28-38. It would have been obvious to a skilled artisan to arranged the projecting support members of Hashimoto in triangular shape (or parallelograms shape or rhomb shape) as suggested by Armstrong et al. The purpose of doing so would have been to provide the even suction forces on the entire surface of the wafer and thus reducing the deformation of the wafer and improving the quality of the images to be printed on the wafer.

Allowable Subject Matter

9. Claims 4-5 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The reasons for the indication of allowable subject matter have been indicated in the previous office action.

Response to Amendment

10. Applicants' amendments filed 2/6/03 and 2/14/03 have been entered. Applicant's arguments have been carefully considered but have been traversed in view of new grounds of rejection as set forth above.


11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung Henry V Nguyen whose telephone number is 703-305-6462. The examiner can normally be reached on Monday-Friday (First Friday off).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Russ Adams can be reached on 703-308-2847. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4900.



HENRY HUNG NGUYEN
PRIMARY EXAMINER

hvn
April 19, 2003